

**REMARKS**

The Office Action mailed on November 15, 2005 has been carefully reviewed and considered. Claims 1, 13-17, 19-24, 29, 32-35 and 50-51 are previously pending and Claims 1, 13-17, 19-24, 29, 32-35 and 50-51 stand rejected. In the foregoing Amendments, Claims 1, 19-24, 29, 32-34 and 50 have been canceled without prejudice or disclaimer of the subject matter contained therein. Claims 13-17 and 35 have been amended and Claims 52-53 have been added. Support for these amendments can be found in the specification and the claims of the application as filed. More specifically, new Claim 52 is supported by FIG. 4 and its corresponding descriptions, and new Claim 53 is supported by the specification on page 19, lines 1-23. No new matter has been added. Claims 13-17, 35, 51 and 52-53 are currently pending in the application. Applicants respectfully request the entry of the foregoing Amendments and reconsideration of the present application in light of the amendments above and the remarks below.

**The 35 U.S.C. § 112, First Paragraph Rejection**

Claims 1, 19-24, 32-34 and 50 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was allegedly not described in the specification in such a way as to enable one of ordinary skill in the art to practice the invention. The Applicants respectfully disagree with this rejection. However, in order to expedite the allowance of the presently claimed invention, Applicants have canceled Claims 1, 19-24, 32-34 and 50 without prejudice to pursue the subject matter in a later related application. Accordingly, this rejection under 35 U.S.C. § 112, first paragraph is respectfully traversed.

The 35 U.S.C. § 102 Rejection

Claims 1, 13-17, 19-23, 29, 31-33, 35, 50, and 51 were rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by Bisaro et al.<sup>1</sup> (“Bisaro”). Without admitting that Bisaro is prior art under § 102 and reserving the right to establish that it is not prior art, Applicants respectfully traverse this rejection for the reasons below. Since Claims 1, 19-23, 29 and 31-33 are canceled without prejudice, the 102 rejection over Claims 1, 19-23, 29 and 31-33 is moot.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 869 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). *See also*, M.P.E.P. §2131.

The amended Claim 35 recites in part:

Compliant substrate comprising a carrier and a structure comprising at least one thin layer, the structure being on a surface of said carrier, the carrier and the structure being joined one to another by a bonding interface whose bonding energy is controlled to permit absorption, in whole or in part by the bonding interface,

(Emphasis added). The Office Action alleges that Bisaro anticipates Claim 35, and more specifically, the Office Action asserts that the ion implantation of the substrate, disclosed by Bisaro, reads on the claimed “bonding interface”. See page 4 of the Office Action. Applicants respectfully disagree with this assertion.

---

<sup>1</sup> U.S. Patent No. 5,141,894.

Applicants respectfully submit that an interface is a surface which is common between two individual elements put in contact. These individual elements are secured (bonded) together by bonding means, for example, by a surface preparation. The term “bonding interface” is commonly used in the semiconductor technology as evidenced in the book “Semiconductor wafer bonding: science and technology” (see the enclosed reference page). Anchoring points centered at a depth  $R_p$  inside a bulk substrate cannot be assimilated to an interface. To avoid any ambiguity, claim 35 has been amended to add the term “transferred” instead of “formed”. This is supported by the application (see for example Fig. 2B and the specification from page 16, line 8 to page 17, line 7). As such, Applicants respectfully submit that the ion implantation of the substrate disclosed by Bisaro can not anticipate the claimed element of the bonding interface.

Applicants further submit that the surface between the substrate and the epitaxial layer disclosed by Bisaro cannot be considered as a bonding interface having a bonding energy that can be controlled. In the case of an epitaxy, the energy at the interface is imposed by the epitaxy according to the differences of lattice parameters between the substrate and the epitaxial layer. On the contrary, a control of bonding energy under the presently claimed structure is possible at the bonding interface and allows the absorption of the stresses.

At least for these reasons, Bisaro can not anticipate Claim 35, and consequently, Claim 35 should be patentable over Bisaro under §102. If independent claims are valid, the claims that depend from the independent claims should also be valid as matter of law. See Jenric/Pentron, Inc. v. Dillon Co., 205 F. 3d 1377, 1382 (Fed. Cir. 2000). Since Claims 13-17 and 51 depend from allowable independent Claim 35, Claims 13-17 and 51 should also be patentable over Bisaro under § 102.

The 35 U.S.C. § 103 Rejection

Claims 24, 34, 44, and 49 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Bisaro, as applied to claims 1, 13-17, 19-23, 29, 31-33, 35, 50, and 51 in view of Yamashita.<sup>2</sup> Without admitting that Bisaro and Yamashita are prior art under § 103 and reserving the right to establish that they are not prior art, Applicants respectfully disagree with this rejection. However, in order to expedite the allowance of the present application, Applicants have canceled Claims 24, 34, 44 and 49 without prejudice. Accordingly, the rejection over Claims 24, 34, 44, and 49 under 35 U.S.C. § 103 is moot, and consequently, this 103 rejection is respectfully traversed.

Conclusion

Based on all of the above, Applicants believe all claims now pending in the present application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

A petition for extension of time for two (2) months is enclosed. No additional fees are believed to be due at this time. However, please charge any additional required fee or credit any overpayment not otherwise paid or credited to our deposit account No. 50-1698.

---

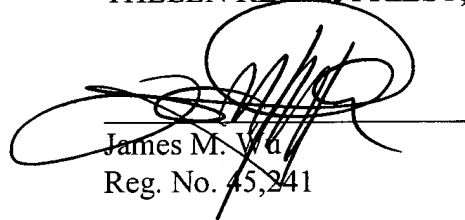
<sup>2</sup> U.S. Patent No. 3,742,318.

Applicants thank the Examiner for carefully examining the present application and if a telephone conference would facilitate the prosecution of this application, the Examiner is invited to contact Jim Wu at (408)282-1885.

Respectfully submitted,

THELEN REID & PRIEST, LLP

Dated: April 12, 2006



James M. Wu  
Reg. No. 45,241

Thelen Reid & Priest LLP  
P.O. Box 640640  
San Jose, CA 95164-0640  
Tel. (408) 292-5800  
Fax. (408) 287-8040

# SEMICONDUCTOR WAFER BONDING: SCIENCE AND TECHNOLOGY

**Q.-Y. TONG**

Duke University  
Durham, North Carolina, USA

Max-Planck-Institute of Microstructure Physics  
Halle, Germany

Southeast University  
Nanjing, China

**U. GÖSELE**

Max-Planck-Institute of Microstructure Physics  
Halle, Germany

Duke University  
Durham, North Carolina, USA



*Sponsored by*

THE ELECTROCHEMICAL SOCIETY, INC. *Pennington, New Jersey*



A WILEY-INTERSCIENCE PUBLICATION

**JOHN WILEY & SONS, INC.**

NEW YORK / CHICHESTER / WEINHEIM / BRISBANE / SINGAPORE / TORONTO